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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/574,519	05/18/2000	Eric Henderson	7164.01	8198

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INTELLECTUAL PROPERTY DEPARTMENT
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DES MOINES, IA 50309

EXAMINER

FREDMAN, JEFFREY NORMAN

ART UNIT	PAPER NUMBER
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1637

DATE MAILED: 12/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/574,519

Applicant(s)

HENDERSON ET AL.

Examiner

Jeffrey Fredman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 August 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 56-63, 65-85 and 89-92 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 66, 76-85 and 89-92 is/are allowed.
- 6) ☐ Claim(s) 56-63, 65 and 74 is/are rejected.
- 7) ☐ Claim(s) 67-73 and 75 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 25. 6) ☐ Other:

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DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on August 12, 2002 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 56-63, 65, 74 are rejected under 35 U.S.C. 102(b) as being anticipated by Xu et al (Langmuir (1997) 13:127-129).

Xu teaches formation of a molecular array spot comprising:

(a) a substrate, here gold (See page 127, figure 1)

(b) a discrete molecular deposition domain on the substrate where the spatial address of the domain is less than one micron squared in area and where the domain includes a biologically or chemically based molecule on the substrate at a preselected known location, here the C₁₈S (alkanethiolate) islands are polymeric chemically based

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molecules (since C_{18} is a polymer of 18 carbons), and Xu notes that "The dimensions of the two islands are $3 \times 5 \text{ nm}^2$ and $50 \times 60 \text{ nm}^2$, respectively" (see page 127, column 2, to page 128, column 1)". The smaller, $3 \times 5 \text{ nm}^2$ island is less than one micron squared in area and therefore meets the claim limitations.

Xu further teaches making lines (see figure 3) and the shapes are both regular (see figure 2, panel (a)) and less regular (see figure 3, panel (a)).

Xu shows high density formats in figure 2, panel d.

4. Claims 56-63 and 65 are rejected under 35 U.S.C. 102(a) as being anticipated by Piner et al (Science (29 January 1999) 283:661-663).

Piner teaches formation of a molecular array spot comprising:

(a) a substrate, here gold (See page 661, figure 1)

(b) a discrete molecular deposition domain on the substrate where the spatial address of the domain is less than one micron squared in area and where the domain includes a biologically or chemically based molecule on the substrate at a preselected known location, here the deposited 16-mercapto-hexadecanoic acid which are polymeric chemically based molecules (since hexadecanoic is a polymer of carbons) (see page 662, figure 3)

With regard to the dimensions, Piner shows spots which are within $1 \text{ um} \times 1 \text{ um}$ squares and therefore necessarily less than 1 micron squared in area (see figure 3, panel c).

Piner further teaches making lines (see figure 2, panel d) and the shapes are both regular (see figure 2, panel (a)) and less regular (see figure 2, panel (c)).

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Piner shows high density formats in figure 3, panel c.

Allowable Subject Matter

5. Claims 66, 76-84, 89-92 are allowed.
6. Claims 67-73 and 75 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. The following is a statement of reasons for the indication of allowable subject matter: The claims which are indicated as allowed are drawn in three different ways. The first set, claim such as claim 67, are clearly drawn to arrays where the deposited molecule is a biomolecule. The cited prior art does not suggest application of the fabrication to biomolecules and is solely focused on formation of chemical type arrays, with Xu expressly noting that the method would be useful in the study of spatially confined chemical reactions (see abstract). Claim 66 is drawn to a method of using the array for detection purposes, which is not taught or suggested by either Xu or Piner. Finally, both Xu and Piner do not suggest or teach placement of two different molecules onto a single array. In particular, Piner, who makes an array pattern in figure 3, does not teach or suggest using different components in the array and suggests that different diffusion patterns may exist for different molecules (see page 663, column 1), which teaches away from the argument that all molecules including biomolecules would have identical absorption patterns. Therefore, the prior art fails to teach or suggest the limitations of the claims which are indicated as either allowed or objected to.

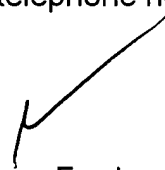
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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Fredman whose telephone number is 703-308-6568. The examiner can normally be reached on 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 703-308-1119. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3014 for regular communications and 703-305-3014 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.



Jeffrey Fredman
Primary Examiner
Art Unit 1637

December 12, 2002.